The London Beekeepers' Association
LBKA News

In this issue...

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As well as the usual newsletter features, Cerys has again kindly recapped last month's meeting for us, Mark begins writing up his US beekeeping travels last summer, Richard shares some observations from the apiary and Emily has been revising (again).

Thanks to those who have contributed to this months' newsletter: Cerys Harrow, Richard Glassborow, Howard Nichols, Mark Patterson, Emily Scott (via her excellent blog) and Simon Wilks.

Please contact Aidan at services@lbka.org.uk if you'd like to discuss writing an article. We hope you enjoy the newsletter.

From our Chair

Richard Glassborow

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In all the years I have been reading Letters from the Chair of one organisation or another it never occurred to me that I would actually find myself writing one. Yet here I am. I feel simultaneously daunted and privileged.

I would like to start this letter by thanking my predecessor Karin Courtman. She has been a very positive and steadying influence on the development of the LBKA over the last few years which, as we all know, has been a time of rapid growth for the organisation. She is also one of our best and most knowledgeable beekeepers. Her generous and unstinting sharing of her knowledge has been a lifeline to many of us. Thank you Karin, don't go away.

On the beekeeping front this is one of the quietest times of the year so I thought I would share some of the new committee's agenda for the coming year and the longer term. The agenda at our first meeting was rather long because it included a lot of housekeeping such as forward planning for things like dates and venues for Courses and Lectures, etc. It is not necessary to discuss such items here but there are some things that we would like to share, albeit briefly.

As we all know the LBKA has long sought a permanent home. Equally, we all know just how difficult it is to meet our specific indoor and outdoor needs in Central London. Those of you at the AGM heard the previous committee outline a strategy developed over the course of the last year. This involves registering as a charity, which recent legislation has made much more feasible and beneficial for small organisations such as ours and which should help address one of our principle constraints, the current limited income and obstacles to seeking other sources of funding. The AGM approved the preparatory work needed to register, so clearly this is a big task for this year.

Also at our first committee meeting we agreed that volunteers could play a more central role in

Association activities. We have recognised that a weakness in the past has been a tendency for committee members to try to do too much of the delivery as well as the planning. This may be all right for planned workload but all the time stuff comes in, requests for events and talks, this and that. When we react by trying to fulfil this too it leads to not-the-most-efficient-outcomes. So this year we are trying to anticipate generic activities more and, in advance, recruit and "train" where necessary, volunteers to support the committee in delivering activities such as events, visits to schools and talks on bees. We hope this will be better for the Association, more interesting and rewarding for volunteer members and produce better outcomes for those seeking our input on London beekeeping. That's the theory. Please consider helping.

Related to these activities is the need for supporting material, such as leaflets, which can aid delivery. Mark Patterson has already produced some excellent leaflets, funded by Groundwork, but we recognise that we need to think more comprehensively about our identity as this also has a bearing on charitable status, future profile and fund raising activities. Don't worry, we are keeping our logo but we are going to have a look at the way the LBKA presents itself to the world.

One brief reminder on the beekeeping front: are we all ready to administer oxalic acid? This is most effective when the colony is broodless (because all the mites will be accessible on the adults). Research suggests colonies are most likely to be broodless between December 10th and 25th.

Finally, our next monthly meeting at Fairly Hall is on the 14th December, a bit of a Christmas jolly and mince pies and alcoholic beverages will be available. I hope to see you there.

Announcements

Next monthly meeting

The next monthly meeting will be a Christmas Quiz with mince pieces and drinks! 11:00 at Fairley House Junior School, 220 Lambeth Rd, SE1 7JY. Hope to see you there!

New committee

The new committee – Richard Glassborow (chair), David Hankins (treasurer), Emma Nye (secretary), Howard Nichols (education), Aidan Slingsby (membership services), Mark Patterson (forage officer) and Paul Vagg (resources) – had their first committee meeting a few weeks ago. Committee members accepted the Code of Conduct for Committee Members (http://lbka.org.uk/committee_conduct.html). Mark declared that he manages hives for clients of the charity he works for and delivers bee-related educational events, training and talks for the same charity, but no one else had any beekeeping activities in London to declare beyond those associated with their own colonies.

Amnesty

LBKA owns a fair bit of equipment for the benefit of its members. This includes bits of hives, extractors, books, microscopes and the like.

Members regularly borrow or hire equipment from us and sometimes we lose track of some of these items. This is inevitable. So we're asking members to have look round and to return anything they might have that belongs to our association. This includes books from our library, nuc boxes and hive parts. Please bring anything to monthly meetings. We understand that it's easy to lose track of items so please don't worry about returning anything!

Winter lectures

Our winter lectures will start next month. Two provisional dates for your diaries are **Wednesday 14th January** and **Wednesday 11th February**. These will be at Roots and Shoots at 1830. We have some interesting speakers lined up and we'll let you know once we've confirmed these.

Courses

We will run (at least) two weekend beekeeping courses this year in April and May. We've yet to confirm the dates (following an incident that needs major repair at the venue) but we will confirm these later this month.

We will charge the same as last year (£150) for the course, which **includes a season's mentoring, a book** and **membership of our association**. After the course and the mentoring, you should be able to keep your own bees, should you wish to.

Apiary sites

We occasionally get offers of sites for beekeeping. If you are interested in this, please contact services@lbka.org.uk. We would only

consider members with at least the BBKA Bee Basic qualification or equivalent.

Help from members

Thank you to members who have offered their help to the association when they renewed their membership. You will be contacted in connect with this at the appropriate times.

Last month's meeting: Mini Beasts – Major Problems

Cerys Harrow
LBKA member

November's meeting focused on two small pests that can cause major problems for the beekeeper.

First up, the all too familiar varroa mite. This session demonstrated how to apply oxalic acid to treat varroa mite in the winter. It is best applied as near as possible to the shortest day (21 December) when there will be least brood present in the colony. It is applied directly to the bees and you need to work as quickly as possible – a good tip is to shine a torch into the hive so that you can see exactly where the bees are without having to disturb them. Oxalic acid was on sale at the meeting at cost price to LBKA members.

Next, the (so far) unfamiliar small hive beetle. In this country it is a notifiable pest although it has not yet arrived here. It originated in Africa, but has been found in Portugal and, more recently, Italy. We are being urged to be extra vigilant as it is probably only a matter of time before it gets into Britain. It can be transported in fruit or in the soil around plants and as London is a major port our hives are especially vulnerable. Howard demonstrated some monitoring traps that are available from the LBKA for £1 each (less than cost price). Mark Patterson, who had just returned from a trip the United States where the beetle is already endemic, was on hand to answer questions about the beetle's life cycle and the steps they are taking to control the pest in America.

Tea, talk and sales of oxalic acid and small hive beetle traps rounded the morning off.

December in the apiary

Where should we be with our colonies at this time of year

December is a quiet time for beekeepers but an eye must still be kept on the apiary. Most items detailed in the November newsletter still apply but are not repeated here.

Varroa treatment with oxalic acid is the main task. Oxalic acid only deals with mites on the adult bees and so must be applied when the colony is broodless or virtually broodless. Late December or early January is the usual time for treatment. The cold, frosty spell we are just starting to enter into should cause the queen to interrupt laying and so leading to minimal brood by the end of this month. Oxalic Acid is a strong chemical and manufacturer's instructions should be followed. Misapplication can be harmful to the bees and/or beekeeper. Please carefully dispose of unused contents after use.

Woodpeckers may start to be a problem. It is the green woodpecker – Picus viridis – which is the main culprit. As the ground becomes harder due to the cold they find it more difficult to dig for insects and can turn their attention to a beehive. There are at least 3 options available to the beekeeper if the woodpecker becomes a pest.

1. Surround the hive with chicken wire, making sure that the bird cannot get a grip on the wood of the hive through the wire. Recommended option.
2. Cover the hive with a large bin liner, polythene bag or sacking but ensuring the bees can come and go. This may interfere with colony ventilation.
3. Keep the hive in the type of cage that fruit growers use on allotments, ensuring the holes in the netting are sufficient for the bees to easily pass through. This is a rather drastic approach but the apiary surround is occasionally altered this way.

Check behind the mouseguards for a build up of dead bees, etc.

Ensure there is a water supply close to the colony. Bees become immobilised and die when the body temperature falls to or below 7C. They will make quick flights at outside temperatures below 7C for toilet purposes or to bring in water. They do this by warming their bodies up beforehand then making a dash for it and returning to the hive before they cool down. It is a dangerous business and the nearer the water supply the better.

Moving the colony. If it is essential to move the colony less than 3 miles then winter is the preferred time. It is better to do this when the weather is forecast to remain cold for at least a week.

Education. Winter is a good time to read your bee books. Even better is to download the Basic syllabus from the BBKA website with a view to taking the exam next summer. Winter reading is a useful beekeeping bridge between seasons.

Keep an eye on the apiary. Check that nothing is amiss and that roofs are in situ.

Review the year. What have I got right? What mistakes have I made? How will I approach my beekeeping next spring in the light of this review?

November in the forage patch

Mark Patterson
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This month there is little to write about forage wise since the bees will mostly be clustering inside the hive and only making the occasional flight to cleanse their bowels. On mild days they may fly to collect pollen from the likes of Hazel, Mahonia, Viburnums, Winter flowering honey suckle and winter bedding plants like primulas and cyclamen.

It is now getting too late to plant spring flowering bulbs to benefit the bees, they may grow but are unlikely to flower as they need time to become well established over winter prior to blooming.

There are a few things you can do to prepare for next year including ordering seeds to sow in spring. The LBKA seed packets make great stocking fillers and can be purchased on the website.

Yes, Mahonia makes another appearance here!

Now is a good time of year to take semi ripe cuttings from plants like wall flower, Ivy, shrubs like Hebe, Viburnum, Flowering currant and Lavender. Make cuttings 6-10 inches long, removing the lower leaves leaving only a few leaves at the tip. Tip the cut ends in hormone rooting powder and pot up into pots containing a gritty compost. Keep cool and moist but not sodden over the winter and by spring they should have taken root providing you with new plants which in a year's time will provide blooms for the bees.

LBKA Apiaries

Richard Glassborow
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This is a quiet time of year in the apiaries but I have two brief items to share.

The first is this photograph from Brockwell apiary manager, Petros, of work in progress on the new apiary. The dark board on the end is where the new observation hive will go. Looks like these bees are getting a better home than we have!

The second photo is not very clear but it shows a drone I found when I went to remove the queen excluders from hives in Eden … on the 29th November!! Proving yet again that bees do not read books about bees or, if they do they do not follow the form.

Mark's beekeeping travels in the US (part 1)

Mark Patterson
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At the AGM in November I gave a presentation about my travels across the USA and my experiences of beekeeping and the beekeepers and associations I met there. I've been asked by several members to expand on what I learnt whilst I was there so I shall be writing up my experiences over the coming months. The first segment of my write up will give a brief overview of beekeeping in the US and how things there differ to our situation in the UK.

Firstly beekeeping in the US has a much shorter history than here in Europe. Beekeeping in the US began in the 1600s when the first Europeans colonised North America and took Honey bees with them for honey. Swarms quickly escaped and rapidly colonised the continent. The Native American Indians referred to honey bees at 'the white man's flies'. These early attempts to keep honey bees used the same Straw Skeps of European Apiculturalists. This changed in 1852 when the Revered Lorenzo Langstroth of Philadelphia discovered the bee space and invented the first box shaped hive featuring removable and re-usable frames which worked to the bee space. This discovery and the invention of the Langstroth hive (now the most used hive type in the world) brought beekeeping into the modern era.

Today almost all American beekeepers use Langstroth hives to house their bees.

Aside from the type of boxes which the Americans use to keep their bees there are a number of differences in husbandry practices and social structures within the beekeeping community.

Firstly unlike here in the UK, there is no nationwide beekeeping association for amateur keepers. There is no American beekeepers association. Instead towns and cities or metropolitan areas will have their own associations and in some states there is a state association which acts as an umbrella organisation. Commercial beekeepers do have a nationwide governing body, 'the American bee farming federation' and 'the American honey producers Association.' These groups represent interests of commercial beekeepers only and lobby government on issues such as pesticides and bee welfare.

Another major difference to amateur keepers in particular is that in many US cities beekeeping is outlawed on grounds of public safety. Fears of swarming and poor husbandry leading to nuisance bees means many cities forbid the keeping of bees on domestic or residential properties and in some areas the keeping of bees is outright banned within city limits. Breaking the law can lead to hefty fines yet despite this there are a growing number of guerrilla beekeepers keeping hives on rooftops disguised as chimney stacks. Some cities allow the keeping of bees only on commercial

property or private non-residential green space.

Most cities which do allow the keeping of bees have strict rules which must be followed. It is often mandatory for apiaries to be registered with public health and hygiene, a water source to be provided and maintained and hives are normally required to be no less than 15 feet away from your property boundary and or a screen in place to control the bees' dispersal. Often a limit of 4 colonies per property is enforced. Many Guerrilla beekeepers do not register, often because the buildings they keep their bees on do not conform to public health and hygiene standards whose inspectors they try to avoid.

The USA has no nationwide bee disease monitoring and control program. Here in the UK we have the national bee unit who's team of bee inspector's work with beekeepers to help them keep their colonies healthy and disease free. In the US individual states are responsible for this. Some states have active disease monitoring and health programs some may have just a single inspector and some have none. There is also no nationwide beekeeper education program. Here in the UK the BBKA delivers a very robust training program offering beekeepers a range of certificates and qualifications from the basic assessment to modular exams, practical husbandry and master beekeeper certificate. The NBU also offer a diploma in beekeeping. In the US only a handful of states have a comprehensive study program leading to a master beekeeper qualification and not all follow the same syllabus. The result is large differences in the education and training of beekeepers across the country.

Because they have no nationwide disease control effort when serious incidents occur it is often left to the efforts of local beekeeping association volunteers to take action. For example in 2012 a truck transporting hives through the City of Atlanta Georgia was involved in an accident on Interstate 75 south spilling over 1 million bees onto the road shutting down 12 lanes of traffic. Members of Georgia state association were called upon to clean up the mess. The truck driver was employed by a haulage company and was not a beekeeper. The haulage company being insured simply walked away from the accident and the hives owner was 1000's of miles away in a different state. Members of the Georgia association arrived to clean up the mess were asked to take the hives home as the owner did not want them back and planned to could claim on their insurance. Some members started the day as amateurs with 1-2 hives and went home as small scale bee farmers with close to 50 hives!

This brings us onto the next major difference in bee husbandry between the USA and the UK. In the UK commercial beekeepers are tiny in comparison to their US counterparts. A commercial keeper in the UK may have several hundred to a thousand hives, which usually stay in the same place or if moved for pollination are not moved more than a few dozen miles. For example hives may be moved from the low lands 50 miles away to the upland moors for heather honey and then brought back again before autumn.

In the US many commercial beekeepers own several thousand hives and they spend most of the year moving them back and forth across the continent to meet the needs of commercial pollination of food crops. Many keepers over winter their colonies in the southern states where winters are mild before moving them to California in February and March to pollinate the Almond trees. 90% of the worlds Almonds are grown in California and Almonds are there biggest export. Next the bees may be moved to Georgia to pollinate peaches or Florida to pollinate Citrus and strawberry. They may then be taken to the north east to pollinate Apples, Blue Berries and end the summer in Alaska and Canada where they will pollinate Cranberry.

All this moving of colonies causes allot of stress to the bees, they are regularly fed gallons of syrup whilst being relocated to the next crop, and for weeks at a time have only a monoculture of blooms to forage on. Then they are moved to the next monoculture and the next. This restricts the variety of their diet and nutritional intake and can weaken colonies. The husbandry practices used by the large commercial keepers are also quite brutal. With so many hives there is no time for the love, care and attention to detail which amateurs give to their bees, instead roofs are ripped off, frames yanked out and then hurriedly shoved back into place. To prevent swarming hives are simply split in two, they don't bother to check where the queen is or if there are queen cells present. It's all a bit inhuman from what I have seen.

American beekeepers also have AFB to contend with. Unlike here where hives contaminated with foul brood are destroyed to contain outbreaks it is common practice in the US to administer antibiotics to infected colonies. This can help relieve the stress of AFB on colonies but does not eliminate the pathogen from the area, colonies can easily become re-infected by nearby colonies drifting. Feral colonies are often blamed for being sources of AFB. AFB is not a notifiable disease in the US so there is no

statutory requirement to confine infected hives or destroy.

I will finish off this instalment of my write up with a shocking fact I learnt in New York this year. Here in the UK it is legal requirement that when labelling our honeys we must give it a non-misleading description. E.g. 'London Honey' must actually be honey produced in London and not in Yorkshire. In the US the labelling regulations allow the producer to either state the place of origin where the honey came from (most keepers do this) or they can instead substitute this with the location where the honey was prepared, jarred and labelled. I was very shocked to learn that a local farmers market in Queens New York selling honey labelled as New York City Honey was actually from a completely different state. It is not uncommon in large Cities in the US for Honey hustlers as they are nick named to buy in buckets of honey by the pallet or boxes of unspun supers by the pallet and then process, jar and label it as their own. This is all perfectly legal there is somewhat deceitful.

Next month I shall write up what I learnt about forage in US cities and how it compares to London.

Musings of a beekeeper

Simon Wilks

"What is your opinion about colony collapse disorder, and what is Monsanto's role in it?"

I was asked this, or something very like it, repeatedly one morning last month, as I impostered behind the stall of the Toronto District Beekeepers – around from the canola guys and next to the disturbingly popular butter sculptures - at the Royal Agricultural Winter Fair. The Winter Fair is a great attraction for schoolchildren, or at least for their teachers, and it seemed a good few hundred had been tasked with getting answers to this and other provocative rural conundrums before being allowed home.

A few days later, asked whether I was involved in any political activity, I replied "I keep bees". I thought I was being flippant, but I've been beginning to wonder.

In Ontario, the beekeepers I've met have certainly seemed a little political. There are dark mutterings about agribusiness, the intransigence of politicians and the reliability of the honey bee research lab at the University of Guelph which snuggles, along with the offices of Bayer and Syngenta (against whom a class action is being mounted on behalf of Ontarian beekeepers) close to the main buildings of the Ontario Ministry of Agriculture, Food and Rural Affairs. And politicians are responding. The Minister himself made a brief appearance at the Ontario Beekeepers' AGM and has recently announced a plan to reduce the use of neonicotinoids in the province.

It's not much, on the face of it, but it's worth considering that Ontario already has some of the strictest controls in the whole of North America, with a list of 82 pest control substances forbidden for sale to homeowners (forcing some to hop across the border to the US to buy them). Golf courses are exempt, but must be accredited by an Integrated Pest Management body and host a public presentation to report their pesticide use (slightly more interesting than I expected).

But Canada is bigger than Ontario, and agriculture is big business. So much so that 80,000 hives were used in 2009 to pollinate 'hybrid' canola (genetically-modified versions of oilseed rape) on behalf of seed producers (mostly Bayer and Monsanto) in Alberta alone. The Canadian Honey Council, a sort-of equivalent of the BBKA, is very clear on this point, proudly pointing out how honey production has risen since GM and neonicotioids have revolutionised the landscape, and tries to ensure respectful relations with the wider context in which beekeeping occurs. So much so that the Ontario Beekeepers Association recently voted at their AGM to withhold their subscription over a difference in opinion on the neonicotinoid issue.

I don't, however, think it's just a case of ornery beekeepers versus big business. As the schoolchildrens' question demonstrated, there's a lot of public anxiety and, as everywhere, no clear answers, and this can be perceived as a threat. I did, at the Winter Fair, wander over to one of the canola guys and ask them a few questions about what they grew and how it was working out and whether they knew why low-nectar varieties would be produced (something I heard mentioned in a lecture a year or two ago). Nothing controversial. But a few hours later, the same man pitched up at the beekeepers' stall in a state of some irritation at all the questions he'd been asked about the negative effects of his crop.

In a sense, it doesn't really matter what individual beekeepers say or do. By existing, we're enmeshed in an uncertain political web, and the issues we'll be expected to have views on will be, necessarily, those which are least clear. To be fair, this affects just about any area of human activity and is one of the main

reasons why democracy, a mechanism for forming consensus out of fog, was invented. It's easy, as many do, to use democracy as a method for outsourcing our thinking to those who can be bothered with it, but that's to discount the value of our own views.

The Ontario beekeepers are doing what they mostly feel right, though, naturally, some object mightily (even the class action – arguably a no-win, no-fee no-brainer – is opposed by some). And they do this mostly through taking votes on things. At their recent AGM, for example, the Ontario Beekeepers Association adopted resolutions to campaign to relax local restrictions on siting hives as well as backing the class action and opposing the Honey Council's stance on pesticides.

It's in the light of is that I've been looking at the agenda for the BBKA's Annual Delegates Meeting, which includes proposals for neonicotinoid restrictions, a ban on honey bee imports and the compulsory registration of beekeepers. These are important issues, and at least some will directly affect how, as individuals, keep bees. The LBKA will, I'm sure, be sending a delegate to reflect our collective views on them but that will only happen if we make those views known. Keeping bees includes a duty to keep them healthy and in a democracy that doesn't just involve practical methods, it involves political methods, too.

Adventures in Beeland: Bee products and forage revision

Emily Scott has taken some more BBKA exams and here are some of her revision notes from her excellent blog: http://adventuresinbeeland .com/blog.

Nectary guides to the foraging bee

I'm afraid I'm well behind on revising. However, I've decided not to give myself a hard time about that. The exam is just for "fun", and if I don't pass it's not a big deal – I'll still have learnt something. And I can retake in March.

How pollination works is something that interests me. Perhaps you have seen bees fly around a plant ignoring some flowers and landing on others, seemingly randomly. But it is not random! They are picking up on all sorts of messages which we often either can't perceive or don't know how to interpret – perhaps a pheromone scent, an electrical charge or 'nectar guide' patterns on the flower petals.

Below is a drawing I did illustrating some of the physical changes clover, forget-me-not and horse chestnut flowers use to show pollinators that they have already been pollinated and therefore are no longer providing nectar and pollen. It is in the interest of plants to help pollinators do their job efficiently, so that they can concentrate on visiting un-pollinated flowers.

Flowers - signs of pollination

Both forget-me-not and horse chestnut use yellow to attract the bees initially when their flowers are un-pollinated and excreting nectar. When the forget-me-not's yellow bulls-eye corona fades to white, this highlights the central nectaries less.

Although a red/pink magenta tone may seem like a more eye catching colour for the horse chestnut flower to change to, actually bees are red colour-blind, so red appears rather dull to them. Additionally the horse chestnut flower's colour change is accompanied by a change in scent that is perceived by bees, so that they can distinguish between younger and older flowers.

My lurid attempt at drawing a field geranium's nectar guides is below. The lines of the nectar guides on the petals draw attention to the flower's nectaries at its centre, like arrows pointing the way. The field geranium flowers between July to September and is a good nectar source for bees.

Field geranium nectar guides

Many nectar guide patterns are not visible to the human eye but can be seen by bees, as they can perceive UV light. So for instance a bee sees some dandelions as having a purple outer ring and a central disc of yellow. This is because the outer florets of the dandelion strongly reflect UV light. However, the UV markings can vary between different micro species of dandelion, for instance the dandelion photographed in Bjørn Rørslett's brilliant UV flower catalogue has a red centre and pale blue outer ring: Dandelion under UV light.

Bees can see other things we can't too – like the electrical field surrounding a flower. Scientists have found that bumblebees can sense the electric field that surrounds a flower and use this information to work out whether a flower has been recently visited by other bees. If it has, it's likely to be low on nectar. Read about this on the National Geographic website: Bees can sense the electric fields of flowers - and here's the original study: Detection and Learning of Floral Electric Fields by Bumblebees.

I'm sure there are many things we have yet to learn about how bees and flowers interact.

References

Module 2 study notes, Mid Bucks Beekeepers Association (2012) – note, in 2012 the syllabus required knowledge of the field geranium nectar guides, in 2014 it does not and just asks for a "named example" of nectary guides

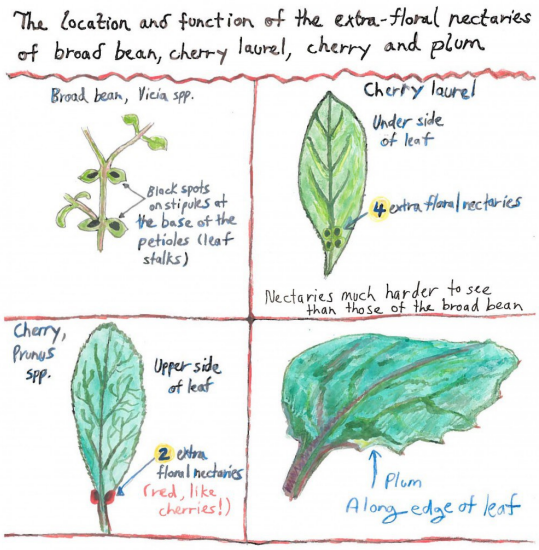
Plants and Honey Bees: their relationships, David Aston and Sally Bucknall (2009)

Flowers in Ultraviolet, Bjørn Rørslett.

Location and function of the extra-floral nectaries

Before I became a beekeeper, I can't remember ever learning about extra-floral nectaries. No-one goes to an extra-floral nectary show, or walks down the aisle clutching a bouquet of exquisite extra-floral nectaries. The world goes by without most of us ever thinking about them. Yet they are very useful to insects such as ants and bees.

So what the heck is an extra-floral nectary anyway? Well, it's a patch of glandular tissue which secretes sugar but is not part of the plant's flower, which is why it's 'extra-floral', i.e. not floral. These glands have been observed in at least 2000 different species of plants, including broad bean, cherry, cherry laurel and plum. Below is a picture I drew showing where they are located on these four examples.



Extra floral nectaries

Since these nectaries aren't near the sex parts of a flower, they obviously have no connection with pollination. So what are they for?

There are a couple of different theories about the function of extra-floral nectaries. One is that the nectaries may act as 'sap valves' to regulate sap pressure within the plant. The thought is that if the sap in the phloem tubes (which transport sap around the plant) become too concentrated with nutrients, the plant releases nectar from its extra floral nectaries to reduce osmotic pressure.

Another theory, which seems to be more commonly accepted, is that the nectaries are a defensive mechanism to reward ants, which will then stop other animals from eating the plant. In The Honey Bee Around and About, Celia Davis mentions an experiment which found that when broad beans had a proportion of their leaves removed to simulate damage by herbivores, the plant produced a lot more extra-floral nectaries within one week.

Extra-floral nectaries: the unobtrusive, unshowy nectar pools of the insect world.

References

Beekeeping study notes (Modules 1, 2 & 3), J.D. & B.D. Yates (2013)

Module 2 study notes, Mid Bucks Beekeepers Association (2012)

LBKA Marketplace

In this section, members offer products and services to other members. If you'd like to add something to this column next month, please email services@lbka.org.uk.

This is a service to members and does not constitute any recommendation or otherwise by LBKA. ***LBKA is not involved in any of these transactions and buyers and seller must proceed at their own risk.***

Some of our **members have honey to sell**, including from Clapham, Kennington/ Southwark, Dulwich, Balham, Stoke Newington, Walthamstow, St James Park and other places. **Please email services@lbka.org.uk for a list.**

Mark Patterson: Photographic calendar featuring some of our bees' favourite forage sources, month by month. Colour printed as a double A4 wall calendar on high quality glossy paper/card. Available at the monthly meeting or from http://www.ebay.co.uk/itm/Bee-Forage-Wall-Calendar-2015-/181591972441. Order your copy now – an ideal Christmas gift.

Corrine Edwards: Selling a selection of Honeybee jewellery and Hexagon jewellery in Diverse Gifts, 390 Coldharbour Lane, Brixton, SW9 8LF. (020) 7733 1488.

Committee

Please do not hesitate to get in touch with a member of the committee if you have any questions, requests, suggestions (and offers of help!), but remember that we are all volunteers with busy lives.

We are **Richard Glassborow** (chair and apiary manager; chair@lbka.org.uk and apiaries@lbka.org.uk), **David Hankins** (treasurer; treasurer@lbka.org.uk), **Emma Nye** (secretary; admin@lbka.org.uk); **Howard Nichols** (education; education@lbka.org.uk), **Aidan Slingsby** (membership services and web; services@lbka.org.uk and webmaster@lbka.org.uk), **Mark Patterson** (forage officer; forage@lbka.org.uk) and **Paul Vagg** (resources; resources@lbka.org.uk).

Our website is http://www.lbka.org.uk/.